

Docket No. 0083-0865-2

IN RE APPLICATION OF: Masashi GOTOH, et al.

SERIAL NO: 09/119,626

RCE FILED: December 6, 2001

FOR: CIRCUIT BOARD HAVING BONDING AREAS TO BE JOINED WITH BUMPS BY ULTRASONIC BONDING

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Transmitted herewith is an **Amendment After Final** under 37 C.F.R. § 1.116 in the above-identified application.

- ☒ No additional fee is required
- ☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 is claimed.
- ☒ Additional documents filed herewith: Marked-up Copy of Amendment

The Fee has been calculated as shown below:

CLAIMS	CLAIMS REMAINING		HIGHEST NUMBER PREVIOUSLY PAID	NO. EXTRA CLAIMS	RATE	CALCULATIONS	
TOTAL	11	MINUS	20	0	× \$18 =	\$0.00	
INDEPENDENT	3	MINUS	3	0	× \$84 =	\$0.00	
		<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS			+ \$280 =	\$0.00	
		TOTAL OF ABOVE CALCULATIONS					\$0.00
		<input type="checkbox"/> Reduction by 50% for filing by Small Entity					\$0.00
		<input type="checkbox"/> Recordation of Assignment			+ \$40 =	\$0.00	
		TOTAL					\$0.00

- ☐ A check in the amount of _____ is attached.
- ☒ Please charge any additional Fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
- ☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.



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0083-0865-2

"RESPONSE UNDER 37 CFR 1.116-
EXPEDITED PROCEDURE EXAMINING
GROUP 2827"

34/FIVE)

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
Masashi GOTOH, et al. : EXAMINER: CUNEO, K.
SERIAL NO.: 09/119,626 :
RCE FILED: December 6, 2001 : GROUP ART UNIT: 2827
FOR: CIRCUIT BOARD HAVING :
BONDING AREAS TO BE
JOINED WITH BUMPS BY
ULTRASONIC BONDING

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AMENDMENT AFTER FINAL UNDER 37 CFR 1.116

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

In response to the Office Action dated July 2, 2002, please amend the above-identified application as follows:

IN THE CLAIMS

Please amend Claims 19 and 22 as follows:

19. (Once Amended) A chip part device comprising:

a circuit board including a board main body and a conductive layer formed on said board main body, said conductive layer having a plurality of bonding areas defined by a conductive pattern; and

a chip element mounted on said circuit board, and having a plurality of bump electrodes which are simultaneously joined with said bonding areas by ultrasonic bonding,

wherein said circuit board includes at least two grooves defined by said conductive pattern and located approximate to one of said bonding areas to put the bonding area therebetween, and wherein at least one of said grooves does not electrically isolate said conductive pattern.

22. (Once Amended) A chip part device comprising:

a circuit board including a board main body and a conductive layer formed on said board main body, said conductive layer having a plurality of bonding areas defined by a conductive pattern; and

a chip element mounted on said circuit board, and having a plurality of bump electrodes which are simultaneously joined with said bonding areas by ultrasonic bonding,

wherein said circuit board includes means for evenly distributing ultrasonic energy applied in a vibrating direction to said plurality of bump electrodes and said plurality of bonding areas.

REMARKS

Favorable reconsideration of this application as presently amended is respectfully requested.

Claims 16-26 are presently active in this case, Claims 19 and 22 having been amended by way of this Amendment. Claims 16-18 have been allowed.

Claims 22-26 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Applicants respectfully traverse this rejection.

The Applicants submit that the specification clearly sets forth various embodiments of the elements that compose the means for evenly distributing ultrasonic energy. By way of illustration and not limitation, page 11, line 10, through page 12, line 10, describes notches 8a and 8b that ensure that “uniform ultrasonic energy” is applied to the bonding areas. Various embodiments of the present invention that provide for an even distribution of ultrasonic energy are discussed throughout the detailed description of the present application and are depicted in the figures thereof. Accordingly, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 112, first paragraph.

Claims 22-26 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicants traverse the indefiniteness rejection by submitting that the claims clearly define the subject matter being claimed. As discussed above with regard to the rejection under 35 U.S.C. 112, first paragraph, the Applicants submit that the specification clearly discloses various embodiments of the elements that compose the means for evenly distributing ultrasonic energy. (See also, e.g., Claim 24.) The Applicants therefore submit that the language of the claims are definite. The Applicants wish to note that “[b]readth of a claim is not to be equated with indefiniteness.” (See MPEP 2173.04 citing *In re Miller*.) Accordingly, the Applicants request the withdrawal of the indefiniteness rejection.

Accordingly, the Applicants submit that Claims 22-26 are in condition for allowance.

Claims 19-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Figure 11 of the present application in view of Mims (U.S. Patent No. 3,893,223). For the reasons discussed below, the Applicants request the withdrawal of the obviousness rejection.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the references must teach or suggest all of the claim limitations.

Claim 19 of the present application recites a chip part device comprising a circuit board including a board main body and a conductive layer formed on the board main body. The conductive layer has a plurality of bonding areas defined by a conductive pattern. The chip part device further comprising a chip element mounted on the circuit board, and having a plurality of bump electrodes which are simultaneously joined with the bonding areas by ultrasonic bonding. The circuit board includes at least two grooves defined by the conductive pattern and located approximate to one of the bonding areas to put the bonding area therebetween, and at least one of the grooves does not electrically isolate the conductive pattern.

The Applicants submit that a *prima facie* case of obviousness has not been established in the present case because (1) the references do not teach or suggest all of the claim limitations, and (2) there is no suggestion or motivation to combine or modify the references. More specifically, the cited references do not disclose or suggest a chip part device comprising a circuit board including a board main body and a conductive layer formed on the board main body, where the circuit board includes at least two grooves defined by a conductive pattern of the conductive layer, and where at least one of the grooves does not electrically isolate the conductive pattern.

Figure 11 is cited for the teaching of a general chip part device. However, as noted in the Office Action, Figure 11 does not disclose two grooves proximate a bonding area to place the area therebetween. The Applicants further note that Figure 11 does not disclose at least one groove that does not isolate the conductive pattern, as recited in Claim 19. The Office

Action cites the Mims reference for the teaching of “grooves (with the conductive material all the way removed) on either side of a bonding area where a row of bonding areas is being ultrasonically attached.”

The Mims reference describes a method for spot welding sheet members by vibratory energy, where weld locations are decoupled from adjacent weld locations by forming apertures, slots, holes, or cutouts that extend the full depth of a single-layered workpiece. The Mims reference does not disclose or suggest a device having a main body and a conductive layer thereon that defines at least one groove that does not isolate a conductive pattern of the conductive layer. Additionally, the Mims reference does not disclose or suggest modifying the invention described therein for use in a device having a main body and a conductive layer thereon.

The Mims reference does not relate to a chip part device comprising a circuit board including a board main body and a conductive layer having a plurality of bonding areas defined by a conductive pattern, as recited in Claim 19 of the present application. The Mims reference is directed to a non-analogous art. The Mims reference is directed to spot welding of sheet metal members. The Mims reference does not contemplate in any manner the joining of a part having a conductive pattern. Therefore, the Mims reference clearly does not contemplate the provision of a groove that does not isolate the conductive pattern. To the contrary, the Mims reference is merely concerned with mechanically joining together two sheet metal members.

The apertures, slots, holes, or cutouts positioned in between welding positions in the Mims reference are not contemplated as being provided so as not to isolate a conductive pattern, since no conductive pattern is present in the Mims reference. Accordingly, the Mims reference does not provide a motivation to combine the reference teachings in the manner

suggested to arrive at the present invention. The Applicants respectfully submit that the rejection is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Applicants' structure as a template and selecting elements from the references to fill in the gaps. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Recognizing, after the fact, that a modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

Even assuming for the sake of argument that one of skill in the art have considered both the Mims reference and Figure 11, the Applicants submit that the Mims reference suggest placing the apertures, slots, holes, or cutouts in the chip (21), rather than in the conductive layer or the circuit board (23). Accordingly, one of skill in the art would not have arrived at the present invention based upon the teachings of the Mims reference with Figure 11 of the present application.

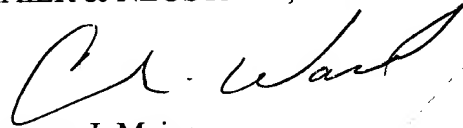
Claims 20 and 21 are considered allowable for the reasons advanced for Claim 19 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claim 19.

Accordingly, the Applicants respectfully request the withdrawal of the obviousness rejection.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

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